

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-17 (Canceled).

Claim 18 (Previously Presented): A production apparatus of a carbon fiber precursor fiber bundle, comprising:

a first intermingling device that comprises a yarn channel having a circular section capable of passing a small tow and that comprises one or more air jet holes for jetting out air into the yarn channel; and

a second intermingling device that comprises a second yarn channel having a flat rectangular section capable of passing a plurality of small tows which are adjacent to each other and that comprises a plurality of air jet holes which are disposed with a predetermined interval along the long side direction of this flat rectangle and which open into the second yarn channel.

Claim 19 (Previously Presented): A production apparatus of a carbon fiber precursor fiber bundle, comprising:

a first intermingling device that comprises a yarn channel having a flat rectangular section capable of passing a small tow and that comprises one or more air jet holes for jetting out air into the yarn channel; and

a second intermingling device that comprises a second yarn channel having a flat rectangular section capable of passing a plurality of small tows which are adjacent to each other and that comprises a plurality of air jet holes which are disposed with a predetermined

interval along the long side direction of this flat rectangle and which open into the second yarn channel, and

wherein the second intermingling device comprises a groove which extends along the lengthwise direction of the second yarn channel and which opens into the second yarn channel at a position where the plurality of small tows are adjacent to each other, wherein the groove has a trapezoidal or semicircular form.

Claim 20 (Previously Presented): The production apparatus of a carbon fiber precursor fiber bundle according to claim 18, wherein the second intermingling device further comprises a groove which extends along the lengthwise direction of the second yarn channel thereof and which opens into the second yarn channel at a position where the plurality of small tows are adjacent to each other.

Claim 21 (Original): The production apparatus of a carbon fiber precursor fiber bundle according to claim 20, wherein the air jet holes of the second intermingling device open only into the groove.

Claims 22-23 (Canceled).

Claim 24 (Currently Amended): A production apparatus of a carbon fiber precursor fiber bundle, comprising:  
an intermingling device that comprises a yarn channel having a flat rectangular section capable of passing a plurality of small tows which are adjacent to each other and that comprises a plurality of air jet holes which are disposed with a predetermined interval along the long side direction of the flat rectangle and which open into the yarn channel, and

a groove which extends along the lengthwise direction of the yarn channel and which opens into the yarn channel at a position where the plurality of small tows are adjacent to each other,

~~The production apparatus of a carbon fiber precursor fiber bundle according to claim 16, wherein the groove has a sectional shape of a part of a circle, and the diameter of the circle is 2 mm or more and 10 mm or less, and the depth of the groove is 1.5 mm or more and 4 mm or less.~~

Claims 25-30 (Canceled).

Claim 31 (Previously Presented): The production apparatus of a carbon fiber precursor fiber bundle according to claim 20, wherein the groove has a sectional shape of a part of a circle, and the diameter of the circle is 2 mm or more and 10 mm or less, and the depth of the groove is 1.5 mm or more and 4 mm or less.

Claim 32 (Previously Presented): The production apparatus of a carbon fiber precursor fiber bundle according to claim 20, wherein the groove has a trapezoidal sectional shape, and the dimension of the long side of the trapezoidal groove section is 2 mm or more and 10 mm or less, and the dimension of the short side corresponding to the groove bottom is 1.5 mm or more and 6 mm or less.

Claims 33-34 (Canceled).